

### In the Claims

Please amend the claims as follows:

1. (Currently Amended) A method of detecting microorganisms in a sample ~~by means of detectable nucleic acid probe molecules~~ comprising:

- a) fixing the microorganisms contained in the sample;
- b) incubating the fixed microorganisms with detectable nucleic acid probe molecules which are capable of hybridizing to a target nucleic acid of the microorganism to be detected so as to form a complex between the detectable nucleic acid probe molecules and the target nucleic acid;
- c) removing nonhybridized nucleic acid probe molecules from the fixed microorganisms;
- d) incubating the fixed microorganisms with a separation solution at a temperature at or above 80°C and up to 100°C which denatures the detectable nucleic acid probe molecules from the target nucleic acid, yielding separated separating hybridized nucleic acid probe molecules without using formamide under conditions that provide more detectable separated nucleic acid probe molecules than corresponding hybridized nucleic acid molecules separated using formamide, wherein the separation solution is selected from the group consisting of water, DMSO, 1 X SSC and 0.001-0.01 M Tris/HCl, pH 9.0 +/- 2.0; and
- e) detecting the separated nucleic acid probe molecules, wherein the presence of the separated nucleic acid probe molecules correlates with the presence of the microorganism in the sample, and wherein the detection signal associated with the separated nucleic acid probe molecules is greater than that with separated nucleic acid probe molecules obtained by incubation in a formamide separation solution.

2. (Original) A method according to Claim 1, wherein the separated nucleic acid probe molecules in step e) are also quantified.

3-8. (Cancelled)

9. (Previously Presented) A method according to Claim 1, wherein the nucleic acid probe molecules are complementary to a chromosomal or episomal DNA, an mRNA or rRNA of a microorganism to be detected.
10. (Previously Presented) A method according to Claim 1, wherein the detectable nucleic acid probe molecules comprise nucleic acid probe molecules covalently bonded to a detectable marker.
11. (Original) A method according to Claim 10, wherein the detectable marker is selected from the group of the following markers:
  - a) fluorescence markers,
  - b) chemoluminescence markers,
  - c) radioactive markers,
  - d) enzymatically active group,
  - e) haptene,
  - f) nucleic acid detectable by hybridization.
12. (Previously Presented) A method according to Claim 1, wherein the microorganism is a single-cell microorganism.
13. (Previously Presented) A method according to Claim 1, wherein the microorganism is a yeast, a bacterium, an alga or a fungus.
14. (Original) A method according to Claim 13, wherein the microorganism belongs to the genus *Salmonella*.
15. (Previously Presented) A method according to Claim 1, wherein the sample is an environmental sample taken from water, soil or air.

16. (Previously Presented) A method according to Claim 1, wherein the sample is a food sample.
17. (Original) A method according to Claim 16, wherein the sample is taken from milk or milk products, drinking water, beverage, baked products or meat products.
18. (Previously Presented) A method according to Claim 1, wherein the sample is a medicinal sample.
19. (Original) A method according to Claim 18, wherein the sample is taken from tissue, secretions or fecal matter.
20. (Previously Presented) A method according to Claim 1, wherein the sample is taken from wastewater.
21. (Original) A method according to Claim 20, wherein the sample is taken from activated sludge, putrefactive sludge or anaerobic sludge.
22. (Previously Presented) A method according to Claim 1, wherein the sample is taken from a biofilm.
23. (Original) A method according to Claim 22, wherein the biofilm is taken from an industrial plant, is formed in purification of wastewater or is a naturally occurring biofilm.
24. (Previously Presented) A method according to Claim 1, wherein the sample is taken from a pharmaceutical or cosmetic product.
25. (Withdrawn) A kit for carrying out the method according to Claim 1, comprising:
  - a) at least one hybridization buffer,

- b) at least one detectable nucleic acid probe for specific detection of a microorganism, and
  - c) at least one detectable nucleic acid probe for performing a negative control.
26. (Withdrawn) A kit according to Claim 25, comprising at least one specific probe for detection of bacteria of the genus Salmonella.
27. (Withdrawn) A kit according to Claim 26, comprising the nucleic acid probes
- Salm63: 5'-TCGACTGACTTCAGCTCC-3'
- and
- NonSalm: 5'-GCTAACTACTTCTGGAGC-3'
- or a nucleic acid probe that differs from Salm 63 and/or NonSalm by a deletion and/or an addition, whereby the ability of this probe to hybridize with Salmonella-specific nucleic acid is maintained, or a nucleic acid that can hybridize with the aforementioned nucleic acids.
28. (Currently Amended) A method of detecting microorganisms in a sample ~~by means of detectable nucleic acid probe molecules~~ comprising:
- a) incubating a sample comprising fixed microorganisms with detectable nucleic acid probe molecules which are capable of hybridizing to a target nucleic acid of the microorganism to be detected so as to form a complex between the detectable nucleic acid probe molecules and the target nucleic acid of the microorganism;
  - b) removing nonhybridized nucleic acid probe molecules from the fixed microorganisms;
  - c) incubating the fixed microorganisms with a separation solution at a temperature at or above 80°C and up to 100°C which denatures the nucleic acid probe molecules from the target nucleic acid, yielding separated ~~separating hybridized~~ nucleic acid probe molecules ~~without using formamide under conditions that provide more detectable nucleic acid probe molecules than corresponding hybridized detectable nucleic acid molecules separated using formamide, wherein the separation~~

solution is selected from the group consisting of water, DMSO, 1 X SSC and 0.001-0.01 M Tris/HCl, pH 9.0 +/- 2.0; and

- d) detecting the separated nucleic acid probe molecules, wherein the presence of the separated nucleic acid probe molecules correlates with the presence of the microorganism in the sample, and wherein the detection signal associated with the separated nucleic acid probe molecules is greater than that with separated nucleic acid probe molecules obtained by incubation in a formamide separation solution.

29. (New) The method of claim 1 or 28 further comprising isolating the separated nucleic acid molecules prior to detection.
30. (New) The method of claim 29 wherein the separated nucleic acid molecules are isolated by centrifugation.